WHAT IS CLAIMED IS:

1. Apparatus for shaping a first optical beam bundle into a second optical beam bundle, the first optical beam bundle carrying a first plurality of substantially parallel optical beams disposed in a common plane of travel, the apparatus comprising:
   - a plurality of first reflective facets;
   - the first reflective facets being oriented so as to deflect the optical beams of the first optical beam bundle into a plurality of intermediate, substantially non-parallel optical beams;
   - a plurality of second reflective facets;
   - each of the second reflective facets being spatially disposed so as to receive a respective one of the intermediate optical beams at a different respective distance from the plane of travel of the optical beams of the first optical beam bundle;
   - the second reflective facets being oriented so as to deflect the intermediate optical beams into a second plurality of substantially parallel optical beams, thereby to form the second optical beam bundle.

2. Apparatus as defined in claim **1**, the second reflective facets further being spatially disposed so as to cause the optical beams of the second optical beam bundle to be aligned along an imaginary line that is normal to the plane of travel of the optical beams of the first optical beam bundle.

3. Apparatus as defined in claim **1**, the first reflective facets being disposed relative to the second reflective facets such that a substantially identical distance is traveled by each of the optical beams of the first optical beam bundle as measured from a first imaginary plane orthogonally intersecting the first optical beam bundle to a second imaginary plane orthogonally intersecting the second optical beam bundle.

4. Apparatus as defined in claim **1**, wherein the first reflective facets are disposed relative to the second reflective facets such that no more than 2.5% of a difference exists between the distances traveled by any two of the optical beams of the first optical beam bundle as measured from a first imaginary plane orthogonally intersecting the first

optical beam bundle to a second imaginary plane orthogonally intersecting the second optical beam bundle.

5. Apparatus as defined in claim **1** , wherein the optical beams forming the first optical beam bundle have substantially common wavelength, and wherein the first reflective facets are disposed relative to the second reflective facets such that the distances traveled by any two of the optical beams of the first optical beam bundle as measured from a first imaginary plane orthogonally intersecting the first optical beam bundle to a second imaginary plane orthogonally intersecting the second optical beam bundle differs by an integral number of wavelengths.

6. Apparatus as defined in claim **1** , wherein the plurality of first reflective facets define the outer faces of a monolithic base.

7. Apparatus as defined in claim **6**, wherein the monolithic base is a first monolithic base and wherein the plurality of second reflective facets define the outer surfaces of a second monolithic base different from the first monolithic base.

8. Apparatus as defined in claim **1**, wherein the plurality of first reflective facets and the plurality of second reflective facets are part of a single integral monolithic base.

9. Apparatus as defined in claim **1**, further comprising:
   - a mechanism for controllably varying the distance traveled by individual ones of the optical beams of the first optical beam bundle as measured from a first imaginary plane orthogonally intersecting the first optical beam bundle to a second imaginary plane orthogonally intersecting the second optical beam bundle.

10. Apparatus as defined in claim **9**, wherein said mechanism is piezoelectric.

11. Apparatus as defined in claim **1**, wherein the optical beams of the first optical beam bundle travel in a common direction of travel, the apparatus further comprising:
   - a mechanism for controllably translating the position of the first reflective facets along the direction of travel.

12. Apparatus as defined in claim **11**, wherein said mechanism is piezoelectric.

13. Apparatus as defined in claim **1**, wherein the optical beams of the first optical beam bundle travel in a common first direction of travel, wherein the optical beams of the second optical beam bundle travel in a common second direction of travel, and wherein the first and second directions of travel are identical.

14. Apparatus as defined in claim **1**, wherein the optical beams of the first optical beam bundle travel in a common first direction of travel, wherein the optical beams of the second optical beam bundle travel in a common second direction of travel, and wherein the first and second directions of travel are different.

15. Apparatus as defined in claim **1**, wherein the first reflective facets have a curvature to condition the optical beams being deflected by the first reflective facets.

16. Apparatus as defined in claim **15**, wherein the second reflective facets have a curvature to condition the optical beams being deflected by the second reflective facets.

17. Apparatus as defined in claim **1**, wherein the optical beams of the first optical beam bundle define a first cross-sectional configuration, wherein the optical beams of the second optical beam bundle define a second cross-sectional configuration, and wherein the first and second cross-sectional configurations are different.

18. Apparatus as defined in claim **17**, wherein the second cross-sectional configuration approximates a circle.

19. Apparatus as defined in claim **17**, wherein the second configuration is more densely occupied than the first configuration.

20. Apparatus for shaping a first optical beam bundle into a second optical beam bundle, the first optical beam bundle carrying a plurality of sets of substantially parallel optical beams, wherein the optical beams of each of the sets of optical beams of the first optical

beam bundle are commonly disposed in a corresponding one of a plurality of substantially parallel planes of travel, the apparatus comprising:

- a plurality of sets of first reflective facets;
- the first reflective facets in each set of first reflective facets being oriented so as to deflect the optical beams of a corresponding one of the sets of optical beams of the first optical beam bundle into a corresponding set of intermediate, substantially non-parallel optical beams;
- a plurality of second reflective facets;
- each of the second reflective facets being spatially disposed so as to receive a respective one of the intermediate optical beams at a different respective distance from the planes of travel of the optical beams of the first optical beam bundle;
- the second reflective facets being oriented so as to deflect the intermediate optical beams into a second plurality of substantially parallel optical beams, thereby to form the second optical beam bundle.

21. Apparatus as defined in claim **20**, wherein the optical beams of the first optical beam bundle define a first cross-sectional configuration, wherein the optical beams of the second optical beam bundle define a second cross-sectional configuration, and wherein the first and second cross-sectional configurations are different.

22. Apparatus as defined in claim **21**, wherein the second cross-sectional configuration approximates a circle.

23. Apparatus as defined in claim **21**, wherein the first configuration comprises an array of N rows and M columns of sectional elements corresponding to the optical beams of the first optical beam bundle and wherein the second configuration comprises a pattern having (NxM) sectional elements arranged differently from the array of N rows and M columns.

24. Apparatus as defined in claim **21**, wherein the first configuration comprises an array of N rows and M columns of sectional elements corresponding to the optical beams of the first optical beam bundle and wherein the second configuration comprises a column of (NxM) rows of sectional elements.

25. Apparatus as defined in claim **21**, the second reflective facets further being spatially disposed so as to cause the optical beams of the second optical beam bundle to be aligned along an imaginary line that is normal to each of the planes of travel of the optical beams of the first optical beam bundle.

26. Apparatus as defined in claim **21**, wherein the first configuration comprises a pattern of spaced apart sectional elements corresponding to the optical beams of the first optical beam bundle and wherein the second configuration comprises a pattern of contiguous sectional elements corresponding to the optical beams of the second optical beam bundle.

27. Apparatus comprising:

- an optical source adapted to emit a plurality of optical beams substantially in a z-direction of an x-y-z orthogonal reference system and parallel to an x-z plane of the orthogonal reference system;
- a mirror configuration disposed at a position in the z-direction so as to receive the optical beams emitted by the optical source;
- the mirror configuration comprising:
  - a plurality of first reflective facets;
  - the first reflective facets being oriented so as to deflect the optical beams received from the optical source into a plurality of intermediate, substantially non-parallel optical beams;
  - a plurality of second reflective facets;
  - each of the second reflective facets being spatially disposed so as to receive a respective one of the intermediate optical beams at a different position in the y-direction of the orthogonal reference system;
  - the second reflective facets being oriented so as to deflect the intermediate optical beams into an outgoing plurality of substantially parallel optical beams.

28. Apparatus as defined in claim **27**, wherein the optical beams emitted by the source are divergent in the x-direction of the orthogonal reference system and wherein the first reflective facets are disposed at positions in the z-direction prior to overlap of any pair

of the optical beams emitted by the optical source as a result of divergence in the x-direction.

29. Apparatus as defined in claim **28**, wherein the optical source comprises:
- an emitter for emitting a plurality of source beamlets; and
- means for parallelizing the plurality of source beamlets to create the plurality of optical beams emitted by the optical source.

30. Apparatus as defined in claim **29**, wherein the means for parallelizing is selected from the group consisting of a collimator, a diffraction grating and a curved mirror.

31. Apparatus as defined in claim **29**, wherein the emitter is a laser diode bar.

32. Apparatus as defined in claim **29**, wherein the emitter comprises a plurality of emitting areas distributed along the x-direction and wherein each of the emitters produces a corresponding one of the source beamlets.

33. Apparatus as defined in claim **32**, wherein each of the emitting areas spans substantially the same distance in the x-direction.

34. Apparatus as defined in claim **33**, wherein each of the optical beams emitted by the optical source originates from a corresponding one of the source beamlets.

35. Apparatus as defined in claim **33**, wherein at least one of the optical beams emitted by the optical source originates from a combination of at least two of the source beamlets.

36. Apparatus as defined in claim **32**, wherein at least two of the emitting areas span substantially different distances in the x-direction.

37. Apparatus as defined in claim **36**, wherein each of the optical beams emitted by the optical source originates from a corresponding one of the source beamlets.

38. Apparatus as defined in claim **36**, wherein at least one of the optical beams emitted by the optical source originates from a combination of at least two of the source beamlets.

39. Apparatus as defined in claim **32**, wherein each of the emitting areas extends substantially the same distance in the y-direction.

40. Apparatus as defined in claim **27**, wherein the outgoing plurality of optical beams is characterized by a cross-sectional density that is superior to the cross-sectional density of the plurality of optical beams emitted by the optical source.

41. Apparatus as defined in claim **40**, wherein the optical source is a laser diode array.

42. A method for shaping a first optical beam bundle into a second optical beam bundle, the first optical beam bundle carrying a first plurality of substantially parallel optical beams disposed in a common plane of travel, the method comprising:
- deflecting the optical beams of the first optical beam bundle into a plurality of intermediate, substantially non-parallel optical beams;
- intercepting each of the intermediate optical beams at a different respective distance from the plane of travel of the optical beams of the first optical beam bundle;
- deflecting the intermediate optical beams into a second plurality of substantially parallel optical beams, thereby to form the second optical beam bundle.

43. An apparatus, comprising:
- a source of first optical beams travelling in a common first direction parallel to an x-z plane of an x-y-z orthogonal reference system and occupying a plurality of first positions in a y-direction of the orthogonal reference system;
- a source of second optical beams travelling in a common second direction parallel to the x-z plane and occupying a plurality of second positions in the y-direction;
- the first and second directions being non-collinear;
- the first positions in the y-direction being different from the second positions in the y-direction;
- a mirror configuration comprising:

- a first reflective area for deflecting the first optical beams into a third direction parallel to the x-z plane and different from the first and second directions;
- a second reflective area for deflecting the second optical beams into the third direction.

44. Apparatus as defined in claim **43**, wherein the first reflective area and the second reflective area are integrated to a common base.

45. Apparatus as defined in claim **43**, wherein the first reflective area comprises a plurality of commonly oriented first reflective facets and wherein the second reflective area comprises a plurality of commonly oriented second reflective facets, wherein the first reflective facets are differently oriented from the second reflective facets.

46. Apparatus as defined in claim **43**, wherein the first positions in the y-direction are interlaced with the second positions in the y-direction.

47. Apparatus as defined in claim **45**, wherein the plurality of first reflective facets are oriented so as to cause the deflected first optical beams to continue to occupy the first positions in the y-direction and wherein the plurality of second reflective facets are oriented so as to cause the deflected second optical beams to continue to occupy the second positions in the y-direction.

48. An apparatus, comprising:
- a source of first optical beams travelling in a common first direction parallel to an x-z plane of an x-y-z orthogonal reference system and occupying a plurality of first positions in a y-direction of the orthogonal reference system;
- a source of second optical beams travelling in a common second direction parallel to the x-z plane and occupying a plurality of second positions in the y-direction;
- the first direction being perpendicular to the second direction;
- the first positions in the y-direction being different from the second positions in the y-direction;
- an optical device comprising:

- a plurality of reflective facets for deflecting the first optical beams into the second direction such that the deflected first optical beams continue to occupy the first positions in the y-direction;
- the optical device being configured to allow through passage of the second optical beams such that the second optical beams continue to travel in the second direction and continue to occupy the second positions in the y-direction.

49. Apparatus as defined in claim **48**, wherein the first positions in the y-direction are interlaced with the second positions in the y-direction.